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ABSTRACT

An innovative and effective laboratory experiment of chemical reference literature is reported. The objectives of the experiment are to acquaint the first term student of college chemistry with the vast source of chemical literature that is available to him; to raise the general level of scientific literacy of these first term college students; and to motivate these students for a thirst of understanding what potential there exists in a college library for all areas of knowledge. The 20-page experiment is given to each participant and explained in detail from a college chemistry professor's point of view. (Author)

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CHEMICAL REFERENCE LITERATURE

Paper presented at the national meetings of the
AMERICAN CHEMICAL SOCIETY (ACS)
(Chemical Literature Division)

Washington D.C.
September 13, 1971

LI 003 088

Shirley M. Young
Professor of Chemistry
FERRIS STATE COLLEGE
Big Rapids, Michigan 49307

This paper is being presented as an "educational innovation" in the area of teaching chemistry to college chemistry students. The purpose in presenting this paper is twofold:

1) to contribute a basic teaching idea to the field of science education, and

2) to invite comments from the participants of the Chemical Literature Division of the American Chemical Society (ACS) for a more effective means of helping chemistry students discover the beauty in books other than the 540's!

This paper reports an innovative and effective "laboratory experiment" that takes place in the college library. The objectives of the experiment are to acquaint the first term student of college chemistry with the vast source of chemical literature that is available to him; to raise the general level of scientific literacy of these first term college students; and to motivate these students for a thirst of understanding what potential there exists in a college library for all areas of knowledge. It is the author's hope that she can give and receive, i.e., this 20-page "experiment" will be discussed in detail during the first half of the presentation with the hope that the latter part will be devoted to comments from the participating audience.

ABSTRACT

CHEMICAL REFERENCE LITERATURE by Shirley M. Young
Professor of Chemistry, FERRIS STATE COLLEGE, Big Rapids, Michigan 49307

This "laboratory experiment" of CHEMICAL REFERENCE LITERATURE takes place in the college library! The objective of the experiment is to acquaint the student of chemistry with the vast source of chemical literature that is available to him. The entire experiment has been very successful and rewarding to the first term college chemistry student. In libraries where the books are arranged according to the "Dewey Decimal" classification all literature is divided into 10 classes; if class is 500 (pure science); division is 540 (chemistry); section is 544 (qualitative); a subsection may be 544.6 (spectrum analysis)! The student becomes intimately acquainted with the card catalogue, vertical file, periodical indices and newspapers, reference books, government documents, independent study, and chemical abstracts. The 20-page "experiment" will be given to each participant and explained in detail from a college chemistry professor's point of view.

BIOGRAPHICAL SUMMARY

1971 Selected as one of the "Outstanding Educators in America"

1971 Presented paper "Teaching the Underprepared College Chemistry Student" to Division of Chemical Education at national meetings of ACS in Los Angeles April 1

1971 Appointed to newly created Committee on Teaching Chemistry from ACS

1970 Selected "Teacher of the Year" by the All College Student Government (students at Ferris State College here in Big Rapids, Michigan)

1969 Selected for Delta Kappa Gamma (International Women Educators Honorary)

1968 Received $1000 cash award for innovative teaching of chemistry from Board of Control at Ferris State College

1963 Recipient of homecoming dedication from students at FSC for "quality teaching"

1948 to present
Has taught college chemistry for the last 23 years on this campus.

B.S. Michigan State University	majors:	Chemistry, Mathematics	minors: Physics, German
M.S. Michigan State University	major:	physical chemistry	
	minor:	biochemistry	

plus equivalent of three years graduate work (90 semester hours) beyond masters trying to learn how to weave chemistry into jargon of education for effective teaching of college chemistry

Membership in professional organizations include:
ACS (American Chemical Society)
AAAS (American Association Advancement Science)
AAUW (American Association of University Women)
NARST (National Association Research in Science Teaching)
NSTA (National Science Teachers Association)
MSTA (Michigan Science Teachers Association)
MCCTA) (Michigan College Chemistry Teachers Association)
ΔKΓ (Delta Kappa Gamma - International Women Educators Honorary)

Chemistry 121
Lab #1
Mrs. Young
Fall 1971

Chemistry "Experiment" #1

CHEMICAL REFERENCE LITERATURE

The class will meet at the designated laboratory time in the lecture room on the third floor of the library. Please take notes of the narration of the thirty (30) colored slides as they are presented to you during the first half hour of this three hour "experiment".

1. AUTOMOTIVE FILE -
2. BOOK CHARGE SLIP -
3. BROWSING AREA -
4. CALL NUMBERS -
5. CARD CATALOG -
6. CHEMICAL ABSTRACTS - AUTHOR INDEX -
7. CHEMICAL ABSTRACTS - FORMULA INDEX -
8. CHEMICAL ABSTRACTS - PATENT INDEX -
9. CHEMICAL ABSTRACTS - SUBJECT INDEX -
10. CIRCULATION DESK -
11. COLLEGE CATALOGS -
12. CONFERENCE ROOMS -
13. CURRICULUM FILE -
14. DOCUMENTS ROOM -
15. FERRIS HISTORICAL ROOM -
16. FLOOR PLAN - 1st FLOOR -
17. FLOOR PLAN - 2nd FLOOR -
18. FLOOR PLAN - 3rd FLOOR -
19. INDEPENDENT STUDY -
20. MICROFILM READER -
21. PERIODICAL CHARGE SLIP -
22. PERIODICAL INDICES -
23. PHOTOCOPY MACHINE -
24. PRINT, ILLUSTRATION AND MAP FILES -
25. READERS' GUIDE -
26. REFERENCE DESK -
27. STUDENT LOUNGE -
28. STUDY LOUNGE -
29. TYPING ROOM -
30. VERTICAL FILE -

Experiment 1

CHEMICAL REFERENCE LITERATURE

Chemistry 121
Fall 1971
Mrs. Young

NAME_____
(last) (first)

The purpose of this experiment is to acquaint the student of chemistry with the vast source of chemical literature that is available to him at the Ferris State College library. In this library the books are arranged according to the "Dewey Decimal" classification. Other libraries may have the L.C. classification (Library of Congress). The Dewey Decimal classification divides all literature into 10 classes, each class into ten divisions, each division into 10 sections, and each section into 10 subsections.

OUTLINE OF DEWEY DECIMAL CLASSIFICATION

CLASSES (hundreds place)	DIVISIONS OF CLASS 5 (500's) (tens place)	SECTIONS OF DIVISION 4 (540's) (units place)	SUBSECTIONS OF Section 4 (544's) (tenths place)
000 General Works			
100 Philosophy			
200 Religion			
300 Sociology			
400 Linguistics			
500 Pure Science...	0 Pure Science	0 Chemistry (general)	
	1 Mathematics	1 Theoretical	
	2 Astronomy	2 Practical & exper.	
	3 Physics	3 Analysis	
	4 Chemistry.....	4 Qualitative.....	1 Wet Methods (544.1)
	5 Geology	5 Quantitative	2 Dry Methods (544.2)
	6 Paleontology	6 Inorganic	4 Gas Analysis (544.4)
	7 Biology	7 Organic	6 Spectrum analysis (544.6)
	8 Botany	8 Crystallography	
	9 Zoology	9 Mineralogy	
600 Applied Science			
700 Arts			
800 Literature			
900 History			

Dewey selected 10 classes so that he could assign a digit to each class. The same was done for the divisions and sections. THE FIGURE DENOTING A CLASS SHOULD OCCUPY THE HUNDREDS PLACE, and a summary of the 10 classes is found on page 5; THAT REPRESENTING A DIVISION THE TENS PLACE with a summary of the 10 divisions on page 6; AND A SECTION THE UNITS PLACE with a summary of the 10 sections on page 7.

Each of the 10 classes has 10 divisions so for the pure science (500's) and applied science (600's) the following breakdown will be helpful:

500 Pure Science
510 Mathematics
520 Astronomy
530 Physics
540 Chemistry
550 Geology
560 Paleonotology
570 Biology
580 Botany
590 Zoology

600 Applied Science
610 Medicine
620 Engineering
630 Agriculture
640 Home Economics
650 Communications, Business
660 Chemical Technology
670 Manufacture
680 Trades
690 Building

10 CLASSES OF THE DEWEY DECIMAL SYSTEM

000 GENERAL WORKS
- 010 Bibliographical Science and Technique
- 020 Library Science
- 030 General Encyclopedias
- 040 General Collected Essays
- 050 General Periodicals
- 060 General Societies (Museums)
- 070 Journalism
- 080 Collected Works
- 090 Book Rarities

100 PHILOSOPHY
- 110 Metaphysics
- 120 Metaphysical Theories
- 130 Fields of Psychology
- 150 Psychology
- 160 Logic
- 170 Ethics
- 180 Oriental and Ancient Philosophy
- 190 Modern Philosophy

200 RELIGION
- 210 Natural Religion
- 220 Bible
- 230 Systematic or Doctrinal Theology
- 240 Devotional Theology
- 250 Pastoral Theology
- 260 Ecclesiastical Theology
- 270 Christian Church History
- 280 Christian Churches and Sects
- 290 Non-Christian Religions

300 SOCIAL SCIENCES
- 310 Statistics
- 320 Political Science
- 330 Economics
- 340 Law
- 350 Public Administration
- 360 Social Welfare
- 370 Education
- 380 Commerce
- 390 Customs

400 LINGUISTICS
- 410 Comparative Linguistics
- 420 English Language
- 430 German Germanic Languages
- 440 French Provencal
- 450 Italian Rumanian
- 460 Spanish Portuguese
- 470 Latin Other Italic
- 480 Greek Hellenic Group
- 490 Other Languages

500 PURE SCIENCE
- 510 Mathematics
- 520 Astronomy
- 530 Physics
- 540 Chemistry Crystallography Mineralogy
- 550 Earth Sciences
- 560 Paleontology
- 570 Biological Sciences
- 580 Botany
- 590 Zoology

600 APPLIED SCIENCE
- 610 Medical Sciences
- 620 Engineering
- 630 Agriculture
- 640 Home Economics
- 650 Business and Business Methods
- 660 Chemical Technology Industrial Chemistry
- 670 Manufactures, Continued
- 680 Manufactures, Continued
- 690 Building Construction

700 ARTS
- 710 Landscape Architecture
- 720 Architecture
- 730 Sculpture
- 740 Drawing Decorative Art
- 750 Painting
- 760 Prints and Print Making
- 770 Photography
- 780 Music
- 790 Recreation

800 LITERATURE
- 810 American Literature
- 820 English Literature
- 830 German and Other Germanic Lit.
- 840 French, Provencal, Catalan Lit.
- 850 Italian, Rumanian, Romansch Lit.
- 860 Spanish and Portuguese Lit.
- 870 Latin and Other Italic Lit.
- 880 Greek and Hellenic Group Lit.
- 890 Literature of Other Languages

900 HISTORY
- 910 Geography
- 920 Biography
- 930 Ancient World History
- 940 European History
- 950 History of Asia
- 960 African History
- 970 North American History
- 980 South American History
- 990 History of Oceania

10 DIVISIONS OF THE 500 (PURE SCIENCE) CLASS

510 Mathematics
511 Arithmetic
512 Algebra
513 Geometry
514 Trigonometry
515 Descriptive Geometry
516 Euclidean Analytic Geometry
517 Calculus
518 Special Functions
519 Probability

520 Astronomy
521 Celestial Dynamics
522 Observatories and Instruments
523 Descriptive Astronomy
525 Earth
526 Geodesy
527 Celestial Navigation
528 Nautical Almanacs
529 Measurement of Time

530 Physics
531 Mechanics of Solids
532 Mechanics of Liquids
533 Mechanics of Gases
534 Sound
535 Optics
536 Heat
537 Electricity and Magnetism
539 Molecular, Nuclear, Atomic Physics

540 Chemistry
541 Physical Chemistry
542 Apparatus and Equipment for Chemical Laboratories
543 Analysis
544 Qualitative Analysis
545 Quantitative Analysis
546 Inorganic Chemistry
547 Organic Chemistry
548 Crystallography
549 Mineralogy

550 Earth Sciences
551 Physical and Dynamic Geology
552 Petrology
553 Economic and Applied Geology
554 Geology of Europe
555 Geology of Asia
556 Geology of Africa
557 Geology of North America
558 Geology of South America
559 Geology of Oceania and Polar Regions

560 Paleontology
561 Paleobotany
562 Invertebrate Paleozoology
563 Protozoa, Porifera, Cnidaria, Echinodermata
564 Mollusca and Molluscoidea
565 Arthropoda
566 Vertebrate paleozoology
567 Fishes
568 Sauropsida (reptiles & birds)
569 Mammals

570 Biological Sciences
571 Archeology
572 Anthropology
573 Physical anthropology
574 Biology
575 Evolution
576 Microbiology
578 Biological Techniques
579 Biological and Natural History Collections

580 Botany
581 Plant Physiology and Morphology
582 Systematic or Taxonomic Botany
583 Dicotyledons
584 Monocotyledons
585 Gymnosperms
586 Cryptogams
587 Pteridophytes
588 Bryophytes
589 Thallophytes

590 Zoology
591 General zoology
592 Invertebrates
593.1 Protozoa
593.2 Mesozoa
593.4 Porifera
593.5 Cnidaria
593.8 Ctenophora
593.9 Echinodermate
594 Mollusca and Molluscoidea
595.1 Vermes
595.3 Crustacea
595.4 Arachnida
595.5 Onychophora
595.6 Myriapoda
595.7 Insecta (Hexapoda)
596 Chordates
597 Fishes
597.6 Amphibia
598.1 Reptilia
598.2 Aves
599 Mammals

10 SECTIONS OF THE 540 (CHEMISTRY) DIVISION

541 PHYSICAL CHEMISTRY

Laws and Theories of chemical reactions and their accompanying physical constitution; chemical effects of radiation and heat on chemical substances

542 APPARATUS AND EQUIPMENT FOR CHEMICAL LABORATORIES

543 ANALYSIS

Comprehensive works covering both qualitative and quantitative analysis. Includes Laboratory apparatus and equipment divided by type of material analyzed, or substance takes precedence over process

544 QUALITATIVE ANALYSIS

Includes bead analysis, dry methods, blowpiping, capillary analysis, flame coloration, gas analysis, microscopical examinations, spectrochemical analysis, spectroscopic analysis

545 QUANTITATIVE ANALYSIS

Includes gravimetric and volumetric analysis, microanalysis

546 INORGANIC CHEMISTRY

Includes elements and their inorganic compounds, preparation, properties, structure

547 ORGANIC CHEMISTRY

Includes preparation and properties of carbon compounds

547.2 Hydrocarbons and Oxygen Derivatives
547.4 It is recommended that Ethers be classified in 547.2

548 CRYSTALLOGRAPHY

Study of nature of crystals (mineral or non-mineral); their origin, internal structure, external forms

549 MINERALOGY

If a person wants to find a book on quantitative analysis, he could go to the 545's and find the library's holdings on the subject arranged alphabetically by author's last name. Go browse at the 546's and list one interesting book you found: title and call number: [ ] What is the SECTION of chemistry for this book?

If a book should be labeled [545 / C971] the 545 is the Dewey number and the C971q is the Cutter number.

while the entire [545 / C971q] is the call number for Quantitative Chemical Analysis by Alexander Cumming.

During the course of this "experiment" the student should become very familiar with each of the following:

A. ABSTRACTS

B. CARD CATALOGUE

C. CONFERENCE ROOMS

D. CURRICULUM MATERIALS

E. DEWEY DECIMAL CLASSIFICATION AND RELATIVE INDEX

F. DOCUMENTS ROOM

G. FERRIS HISTORICAL ROOM

H. INDEPENDENT STUDY

I. MAP FILES

J. PERIODICAL INDICES AND NEWSPAPERS

K. PHOTOCOPY MACHINES

L. PICTURE FILES

M. TYPING ROOMS

N. VERTICAL FILES

O. REFERENCE BOOKS

1. ENCYCLOPEDIAS
2. DICTIONARIES
3. HANDBOOKS
4. BIBLIOGRAPHIES
5. RECIPE BOOKS
6. DIRECTORIES

A. ABSTRACTS

INTRODUCTION

Chemical Abstracts (CA), "Key to the World's Chemical Literature," provides the most comprehensive, English-language chemical and chemical engineering abstracting service in the world. Each weekly issue contains two parts:

(1) Abstracts and
(2) Issue Indices.

In order to assist the reader in the most effective use of the information contained in each part of CA, the following Illustrative Key is presented.

THE ABSTRACTS

The Abstracts part of CA includes abstracts from three types of documents:
(1) journal articles, collections from congresses, symposia, dissertations and the like, and government final reports;
(2) new-book announcements; and
(3) patents.

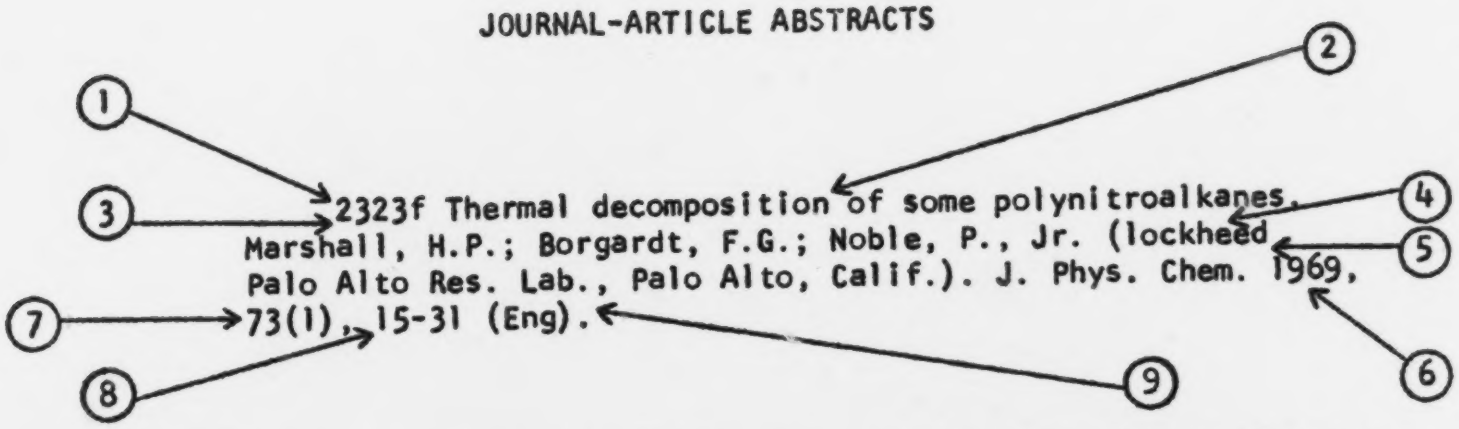
The abstracts are classified according to chemical subject and are arranged in eighty subject groups or Sections. A listing of the Sections in each issue of CA is found on the first page. The arrangement of abstracts within any given Section places journal-article abstracts first, new-book announcements second, and patent abstracts third. Horizontal lines across the column delineate the three groups. Cross-references are inserted with "See also" designations at the end of each Section. These indicate abstracts printed in other Sections with some interest to the Section in which they are cited. They give an indication of the subject matter, Section number (in parentheses), and the CA abstract number.

The CA informative abstract attempts to be an accurate, clear, and concise summary, complete in essentials, so that the reader can make a valid judgement whether the particular original document need be consulted. In no case is the CA abstract meant to serve as a substitute for the original document. The following components of a document are considered to be significant and are included in CA informative abstracts:

(1) the purpose and scope of the reported work;
(2) new reactions, compounds, materials, techniques, procedures, apparatus, properties, and theories;
(3) new applications of established knowledge; and
(4) the results of the investigation together with the author's interpretations and conclusions.

Unlike the abstract which is subject to considerable variation in content and mode of presentation, the abstract heading presents consistent and rigidly formated information including the full bibliographic citation and an edited, specific title for the original document. The following examples illustrate CA practices for headings and discuss CA abstracts from the three types of documents listed above.

JOURNAL-ARTICLE ABSTRACTS



(1.) The abstract number appears in boldface type at the head of each abstract and book announcement. Abstracts are numbered continuously through an entire volume. The letter following each number is a computer-generated check-letter by which each reference is computer-validated. Check-letters have been in use since Volume 66 (1967) and should not be confused with the column fraction designation used in earlier CA volumes.

(2.) The document title in boldface type is an edited reproduction of an English-language title or as literal a translation of a foreign-language title as is consistent with good English.

(3.) The author names are given in inverted style (last name first). Coauthor names are separated by semicolons and are listed in the order in which they appear on the original document. Up to ten author names are printed for one document. When more than ten authors occur, only the first author's name is printed plus the abbreviation "et al."

(4.) The address in parentheses which follows the author names is the location at which the reported work was done. Generally accepted, unambiguous abbreviations are used extensively in these addresses.

(5.) The journal title in abbreviated form is printed in italics type. Abbreviations conform to those recommended by the American National Standards Institute, Inc.

(6.) The year of publication is highlighted by boldface type.

(7.) The volume number is given in light-face type followed by the issue number in parentheses.

(8.) The inclusive pagination of the article follows.

(9.) The language of the original document is indicated, usually by an abbreviation enclosed in parentheses. A list of the language abbreviations follows:

Bulg	Bulgarian	Neth	Netherlandish
Ch	Chinese	Norweg	Norwegian
Croat	Croatian	Pol	Polish
Dan	Danish	Port	Portuguese
Eng	English	Rom	Romanian
Fr	French	Russ	Russian
Ger	German	Slo	Slovak
Hung	Hungarian	Span	Spanish
Ital	Italian	Swed	Swedish
Japan	Japanese	Ukrain	Ukrainian

For all other lanugages, no abbreviations are used.

A. ABSTRACTS

Chemical Abstracts originated in 1907 and provides chemists with concise summaries of articles of chemical interest which appear in both domestic and foreign publications. It is published twice monthly by the American Chemical Society which reviews about 9,000 periodicals. There are the following indices:

1. AUTHOR INDEX
2. SUBJECT INDEX
3. FORMULA INDEX
4. PATENT INDEX

Give the name of the author,
the title of the article, and
the exact reference of the ORIGINAL article
(page, volume, year) in obtaining the following information from CHEMICAL ABSTRACTS.

a. Refer to the Chemical Abstracts 1963 SUBJECT INDEX and cite the reference to an article on nomenclature of inorganic compounds in Czechoslovakia.

b. Refer to the Chemical Abstracts 1962 FORMULA INDEX and cite the reference concerning Cu_3P.

c. Refer to the Chemical Abstracts 1963 AUTHOR INDEX and cite the reference to an article written by Calvin A. Vander Werf.

d. Refer to any PATENT INDEX and cite a reference.

e. Cite the reference to an article appearing in an August, 1965 Chemical Abstracts on pharmaceuticals.

Biological Abstracts are also located in the library. If time permits, ask the librarian for the location of these abstracts, and just browse to see what they contain.

B. CARD CATALOGUE

The card catalogue is a multiple card index to the library. It is composed of 3 x 5 cards and enables a person to have several approaches to one book. Most books are listed under:

(1) Author's Name
(2) Title
(3) Subject

The card catalogue also has cards that contain subject matter for the vertical files.

What is the significance of the blue plastic strips on some of the cards in the card catalogue?

What is the significance of the dark red plastic strips on some of the cards in the card catalogue?

Use the card catalogue to fill in the following blanks:

	AUTHOR	TITLE	SUBJECT	CALL NUMBER
1.	Ferris, Woodbridge	_____	_____	921 F394a
2.	_____	"Solid Propellant Rockets"	_____	_____
3.	_____	_____	any book on space	_____
4.	_____	_____	any book on education	_____
5.	_____	_____	any book on chemistry	_____

C. CONFERENCE ROOMS

Conference Rooms must be signed for, and are for use by students for discussion groups, debate practice, etc. There are four of these rooms on the second and third floors.

How long may a conference room be used for one session?

Find two other students in this class and the three of you check out one of the conference rooms for 15 minutes while working on this experiment!

D. CURRICULUM MATERIALS

CUrriculum Materials are shelved at the end of the 399's on the first floor and are marked with a "C" above the call number. There are also filing cabinets with supply catalogs, teaching aids, etc. in the same general area.

Find a chemical supply catalogue and list the call number and the title.

[ ] _____

List three other types of materials (besides supply catalogues) that you found in the CUrriculum Materials.

1.

2.

3.

E. DEWEY DECIMAL CLASSIFICATION AND RELATIVE INDEX

Teacher Education students will check out the Dewey Decimal Classification and Relative Index and complete the following:

370 _____

371 _____

372 _____

373 _____

374 _____

375 _____

376 _____

377 _____

378 _____

379 _____

Pharmacy students will check out the Dewey Decimal Classification and Relative Index and complete the following:

615 _____

615.37 _____

615.4 _____

615.5 _____

615.8 _____

615.82 _____

615.85 _____

Pre-engineering and all other chemistry students will check out the Dewey Decimal Classification and Relative Index and complete the following:

660 _____

661 _____

661.2 _____

662 _____

662.1 _____

663 _____

F. DOCUMENTS ROOM

The Documents Room is located on the third floor and contains cataloged U.S. Government documents and Michigan documents. If assistance is needed in using these documents, please ask the librarian in the room.

Department and Agency Symbols Currently in Use

A	Agriculture Department
AC	Arms Control & Disarmament Agency
C	Commerce Department
CC	Federal Communications Commission
CR	Civil Rights Commission
CS	Civil Service Commission
CZ	Panama Canal Co. & Canal Zone Gov't.
D	Defense Department
DC	District of Columbia
FA	Fine Arts Commission
FAA	Federal Aviation Agency
FCA	Farm Credit Administration
FHL	Federal Home Loan Bank Board
FM	Federal Mediation & Conciliation Serv.
FMC	Federal Maritime Commission
FP	Federal Power Commission
FR	Federal Reserve System Board of Gov.
FS	Health, Education, & Welfare Dept. (formerly Federal Security Agency)
FT	Federal Trade Commission
FTZ	Foreign Trade Zones Board
GA	General Accounting Office
GP	Government Printing Office
GS	General Services Administration
HH	Housing & Home Finance Agency
I	Interior Department
IA	United States Information Agency
IC	Interstate Commerce Commission
J	Justice Department
Ju	Judiciary(Courts of the U.S.)
L	Labor Department
LC	Library of Congress
LR	National Labor Relations Board
NA	National Academy of Sciences
NAS	National Aeronautics & Space Admin.
NC	National Capital Planning Comm.*
NMB	National Mediation Board
NS	National Science Foundation
P	Post Office Department
Pr	President of United States
PrEx	Executive Office of the President
RA	National Railroad Adjustment Bd.
RnB	Renegotiation Board
RR	Railroad Retirement Board
S	State Department
SBA	Small Business Administration
SE	Securities & Exchange Commission
SI	Smithsonian Institution
T	Treasury Department
TC	Tariff Commission
VA	Veterans Administration
X & Y	Congress

* Comm. stands for Commission

Check out one government document from a department that has a symbol starting with the first letter of your last name. Write a brief paragraph concerning your reaction to this material.

What is a document? (you may use the back side of this page for more room if needed)

H. INDEPENDENT STUDY

Independent Study is located on the third floor. It contains phonograph records, tapes, filmstrips, slides and the machines to use these materials. There is also a small collection of three-dimensional models. The room is equipped with electronic carrels and is intended to be used by students to supplement their classroom instruction or for their interest or pleasure. All materials are cataloged with cards in both the main catalog and in the separate catalog in the Independent Study.

The following audio CHEMISTRY TAPES have been prepared by Mrs. Young and have been placed in the INDEPENDENT STUDY of the library for student use in any chemistry class. There are several copies of each available. Be sure to bring pencil and paper in order to work out the mathematical problems as given on each tape.

CHEMISTRY TAPE #	NAME
1	MOLE CONCEPT
2	WEIGHT-WEIGHT
3	VOLUME-VOLUME
4	WEIGHT-VOLUME
5	PERCENTAGE COMPOSITION (% from formula)
6	FORMULA FROM PERCENT
7	BOYLE'S LAW
8	CHARLES' LAW
9	COMBINATION GAS LAW
10	GRAHAM'S LAW OF DIFFUSION
11	ELECTROCHEMISTRY
12	CALORIMETRY
13	MOLARITY
14	NORMALITY
15	MOLALITY
16	MOLE FRACTION
17	FREEZING POINT DEPRESSION AND BOILING POINT ELEVATION
18	METRIC SYSTEM
19	TEMPERATURE CONVERSION
20	DENSITY AND SPECIFIC GRAVITY

G. FERRIS HISTORICAL ROOM

The Ferris Historical Room, furnished in the period when Woodbridge N. Ferris was most active in the college, is intended to be used by serious students of the history of the college. Files of yearbooks, scrapbooks, letters, catalogs, etc. relating to W.N. Ferris and the college are housed in an adjoining room and are available on request for use in the room. An archivist is on duty part time, and if the room is closed, ask the library staff for assistance.

What is your impression of the "Ferris Room"? .

INDEPENDENT STUDY

1. Check out one chemistry tape and <u>listen</u>. Give title of tape and brief resume. (See previous page for tape list.)

2. Check out one filmstrip and <u>watch</u>. Give title of filmstrip and brief resume.

3. Check out one record and <u>listen</u>. Give title of record and your reaction to this record.

I. MAP FILES

The Map Files are located near the Vertical Files and contain a selection of various kinds of maps, including U.S. Geological Survey maps of Michigan.

List one map by title that you found. _____

J. PERIODICAL INDICES AND NEWSPAPERS

There are several periodical indices in this library. The student should become familiar with three of these during this period. These are indices to magazines and journal articles.

1. READERS' GUIDE

   Each Student will select one subject in chemistry to investigate in the Readers' Guide. List one article by name and author and source that you found in the Readers' Guide.

   _____ _____ _____

2. APPLIED SCIENCE AND TECHNOLOGY INDEX

   Each student will select a subject in Chemistry to investigate in the Applied Science and Technology Index. Locate one article from a periodical that the library has and briefly outline the content of this article giving the name, author, periodical, and other pertinent information on the back of this page.

3. EDUCATION INDEX

   Browse in this index and write a short paragraph on the back of this page summarizing one article that was found as a result of using this index.

The Journal of the American Chemical Society is devoted to detailed reports of chemical research in the various fields. List one article that appears in the latest issue of this journal.

_____

What field of chemistry? _____

Date of Journal _____

The Journal of Chemical Education is much less technical in nature than The Journal of the American Chemical Society and the articles pertain to chemical education. List one article that appears in the latest issue of this journal.

_____

Date of journal. _____

K. PHOTOCOPY MACHINES

Photocopy Machines are for student use. Two of them are located on the second floor, and the cost to copy one page is 10 cents.

Find the photocopy machine and describe specific location.

L. PICTURE FILES

Picture Files located on the first floor near the Vertical Files, are primarily for use by students in commerical art and the humanities. In addition to pictures found in these files, there is a large collection of mounted and unmounted illustrations, which are available for use upon request. A special card index to pictures is located at the end of the card catalog. The pictures may be checked out overnight, but the illustrations circulate for two weeks.

Find the picture files and list title of one picture you'd like to check out.

_____

M. TYPING ROOMS

Typing Rooms, on the second and third floors, each containing 10 typewriters, are for student use at no charge.

Find the typewriters and type your complete name and home town here:

_____ _____

N. VERTICAL FILES

V-files in this library are maintained for pamphlets and newspaper clippings arranged alphabetically by subject and located on the first floor. It can be extremely useful for material not available in books and periodicals. A subject card for most materials in the V-file is kept in the CARD CATALOGUE.

Browse through the V-file and take out of the file one pamphlet that appears interesting. Write a brief summary (on the back of this page) of the pamphlet and then take the pamphlet to the circulation desk. DO NOT ATTEMPT TO PUT THE PAMPHLET BACK IN THE V-FILE.

0. REFERENCE BOOKS

1. ENCYCLOPEDIAS

a. List two subject areas that were found in the ENCYCLOPEDIA OF SCIENCE AND TECHNOLOGY, (McGraw - Hill)

1._____ 2._____

2. DICTIONARIES

Chemical dictionaries are used for quick reference and accurate, concise information. Ask the librarian for one of the following chemical dictionaries. Encircle the one you are using.

Hackh's Chemical Dictionary
Stewart's Scientific Dictionary
A Dictionary of Chemical Equations
VanNostrand's Scientific Encyclopedia
Kingzett's Chemical Encyclopedia
The Condensed Chemical Dictionary
A New Dictionary of Chemistry
The VanNostrand Chemist's Dictionary

List what type of information could be found on page 50.

3. HANDBOOKS

The two most practical chemical handbooks for the first year chemistry student are LANGE'S HANDBOOK OF CHEMISTRY and the HANDBOOK OF CHEMISTRY AND PHYSICS edited by Hodgman. Both of these handbooks contain a variety of information. Request one of these handbooks in order to locate the following information.

Handbook_____

Edition_____

a. What color is the flame test for barium compounds?

b. What is the standard electrode (oxidation-reduction) potential for the copper electrode?

c. What is Avogadro's number?

d. Find a definition for chemistry.

4. BIOGRAPHICAL DICTIONARIES

Finding the biographies of persons who have contributed in the sciences can be helpful in certain areas of study. There are many different types of biographical dictionaries. Some biographical dictionaries cover broad areas, such as Who's Who in America, while others are about persons in a certain occupation, or limited geographical area.

Some of the scientific biographical dictionaries include:

1) Asimov's Biographical Encyclopedia of Science and Technology

2) American Men of Science in 8 volumes

3) World Who's Who in science

4) McGraw-Hill Modern Men of Science

Look up Walter Pearson Kelley and record which biographical dictionary you used.

He was an American chemist. Record his birth and death dates.

Record the title of one of his books.

Does this library have this book?

If so, what is the call number?

5. RECIPE BOOKS

There are recipe books in this library that will give information on tanning leather and other chemical recipes. List two of these books by title and call number.

1)

2)

List one recipe with instructions on the back of this page that you found interesting. Include reference.

6. DIRECTORIES

a. Ask the librarian at the circulation desk for the Dun and Bradstreet Million Dollar Directory.

What million dollar industry is located in Fremont, Michigan?

What cities in Alaska have million dollar businesses?

Who is the president of Dow Chemical Company at Midland, Michigan?

b. Ask the librarian for the Directory of Michigan Manufacturers. List one manufacturing concern in Big Rapids and the product(s) each produces.

By using the Directory of Michigan Manufacturers, list one manufacturing concern from your home town and the product(s) they produce.

Is there a chemical company in your home town?

If so, list name, address, and products produced.

And the best part of all is B R O W S I N G !

Look through the books on chemistry and choose one book that looks especially interesting. Turn to the table of contents and list two chapters that look most interesting and challenging.

Book title _____ Author _____

Section of chemistry _____ Call Number _____

1.

2.

Look through the books on biology and choose one book that looks especially interesting. Turn to the table of contents and list two chapters.

Book title _____ Author _____

1. Call Number _____

2.

Look through the books on physics and choose one book that looks especially interesting. Turn to the table of contents and list two chapters that look most interesting and challenging.

Book title _____ Author _____

1. Call Number _____

2.

Look through the books on mathematics and choose one book that looks especially interesting. Turn to the table of contents and list two chapters that look most interesting and challenging.

Book title _____ Author _____

1. Call Number _____

2.

What have you gained from this Chemical Reference Literature experiment?

List two areas or parts of the library that you discovered that should be included in next years Chemistry 121 CHEMICAL REFERENCE LITERATURE experiment.

1)

2)

It will take between 4 and 5 hours additional time spent in this library to complete this "experiment." You have one week to finish it. This Experiment #1 (CHEMICAL REFERENCE LITERATURE) is due at the beginning of your lab period next week. Happy browsing and discovering the beauty in books!

FERRIS STATE COLLEGE LIBRARY

Library Arrangement The College Library is arranged by the Dewey Decimal classification with the numbers divided on each floor as follows:

First Floor:	000 General Works 100 Philosophy	200 Religion 300 Social Sciences	400 Languages 500 Pure Sciences
Second Floor:	600 Applied Science	700 Fine Arts	
Third Floor:	800 Literature	900 History	

Card Catalog The card catalog is located on the first floor near the Circulation Desk. All cards are arranged alphabetically by author, subject and title in one file. Cards for subjects in the Vertical Files (pamphlets and clippings) as well as cards for documents, records, filmstrips, slides, etc. are also filed in the main catalog. Thus, one catalog is a guide to all materials in the Library.

Reference Service The main reference desk is located on the first floor next to the Circulation Desk, and the librarian stationed there should be consulted for help in using the card catalog, in locating materials not found in the catalog, and for help with subject questions. There is also a reference desk on third floor which has a collection of reference materials in literature and history (800's and 900's).

Circulation Students are requested to fill out a charge card for each book to be taken out and take the book, card, and their Student Identification Card to the Circulation Desk on the main floor. Most books and pamphlets circulate for two weeks and may be renewed twice for two weeks each time by bringing the book back to the library and requesting a renewal. If a book has been reserved by a student, it cannot be renewed. Certain books marked "R" or having a slip inside the front cover "Do not take this book from the library" may be taken for 24 hours if permission is obtained.

Reserve Books The Library has two types of reserves which are located behind the Circulation Desk. The Textbook Reserve keeps one copy of each official text on reserve; the Teachers' Reserve consists of books placed on reserve by various teachers, and this collection is listed under the teacher's name. All reserves are to be used in the Library for a period of two hours and may be taken for overnight use. Rules on circulation of reserve books are posted at the Circulation Desk.

Fines Library fines are 5 cents per book per day until returned. Fines for reserve materials and periodicals are 25 cents for the first hour and 10 cents for each additional hour until the material is returned. The purpose of the fine system is to assure that the library materials are available for the use of many students, not just one.

Periodicals The periodicals, or magazines and newspapers, are located on the second floor. All indexes to magazines and newspapers are also located on this floor and a reference librarian is on duty to assist with their use. The current issues of some periodicals are on display in the reading room and all back issues are in the periodical stack room and must be requested. A directory listing of all titles is located at the Periodicals Desk, and all indexes show the indexed periodicals which the Library owns.

Periodicals must be used in the library. They are checked for two hours and are renewable for an additional two hours. This is to assure that many students have access to all periodicals. **There is no overnight circulation of periodicals.**

Microfilm The Library has quite a large collection of periodicals on microfilm, which are listed in the periodicals directory. The microfilm readers are located in the Periodical Reading Room. Newspapers available on microfilm include **The Big Rapids Pioneer, The New York Times, The Christian Science Monitor, The Michigan Chronicle** and **The Wall Street Journal.** A reader-printer is available to make copies of articles on microfilm at 15 cents a page.

Special Collections:

Automotive Files are located on the second floor and contain tool and parts catalogs, manuals, and other materials of interest to students in the Automotive Department.

College Catalogs are shelved in a special section on second floor, with the exception of Michigan college bulletins, which are kept behind the Circulation Desk on first floor.

Curriculum Materials are shelved at the end of the 399's on the first floor and are marked with a "C" above the call number. There are also filing cabinets with supply catalogs, teaching aids, etc. in the same general area.

Documents Room is located on the third floor and contains cataloged U.S. Government documents and Michigan documents. If assistance is needed in using these documents, please ask the librarian in the room, at the third floor reference desk, or in the Independent Study.

Ferris Historical Room, furnished in the period when Woodbridge N. Ferris was most active in the college, is intended to be used by serious students of the history of the college. Files of yearbooks, scrapbooks, letters, catalogs, etc. relating to W. N. Ferris and the college are housed in an adjoining room and are available on request for use in the room. An archivist is on duty part time, and if the room is closed, ask the library staff for assistance.

Independent Study, is located on the third floor. It contains phonograph records, tapes, filmstrips, slides and the machines to use these materials. There is also a small collection of three-dimensional models. The room is equipped with electronic carrels and is intended to be used by students to supplement their classroom instruction or for their interest or pleasure. All materials are cataloged with cards in both the main catalog and in the separate catalog in the Independent Study.

Map Files are located near the Vertical Files and contain a selection of various kinds of maps, including U.S. Geological Survey maps of Michigan.

Picture Files, located on the first floor near the Vertical Files, are primarily for use by students in commercial art and the humanities. In addition to pictures found in these files, there is a large collection of mounted and unmounted illustrations, which are available for use upon request. A special card index to pictures is located at the end of the card catalog. The pictures may be checked out overnight, but the illustrations circulate for two weeks.

Vertical Files contain pamphlets and clippings arranged alphabetically by subject, and are located on the first floor.

Special Facilities:

Browsing Area is a comfortable, attractive area on the first floor which features new books, unusual pamphlets, magazines, etc. with facilities for attractive displays.

Conference Rooms must be signed for, and are for use by students for discussion groups, debate practice, etc. There are four of these rooms on the second and third floors.

Faculty Lounge for faculty use is located on the third floor.

Multi-Purpose Room on the third floor combines space for library orientation classes and for exhibits.

Photocopy Machines are for student use. Two of them are located on the second floor, and the cost to copy one page is 10 cents.

Student Lounge is located on the third floor and is the only room in the library in which smoking is permitted.

Study Lounge on the east side of the main floor is intended for study only. It is hoped that students wishing to study their textbooks will use this facility.

Typing Rooms, on the second and third floors, each containing 10 typewriters, are for student use at no charge.

General Information:

A public telephone is located in the front lobby.

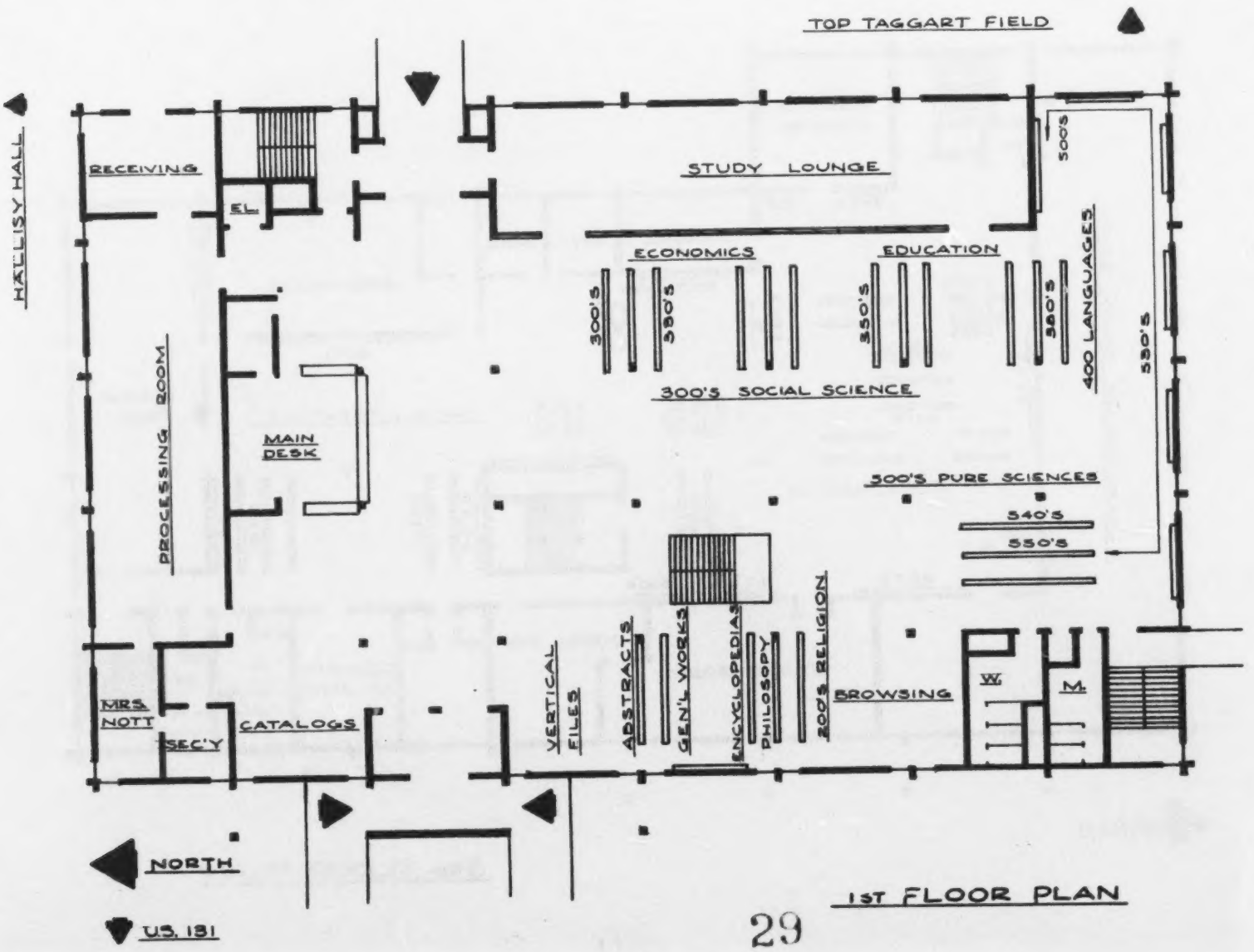
A book return slot is located at the west side of the building.

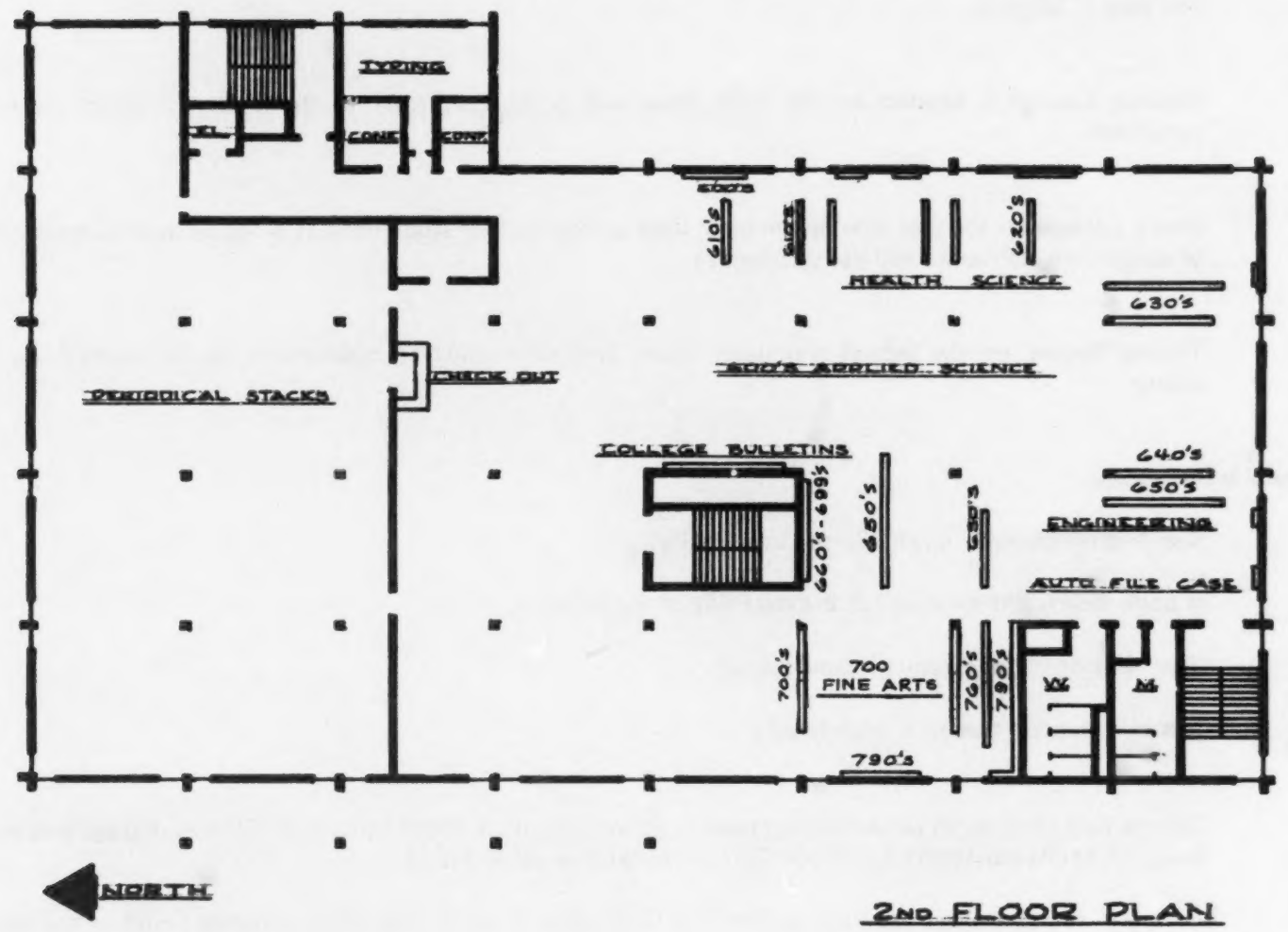
The building is completely air conditioned.

Library hours are posted in each lobby.

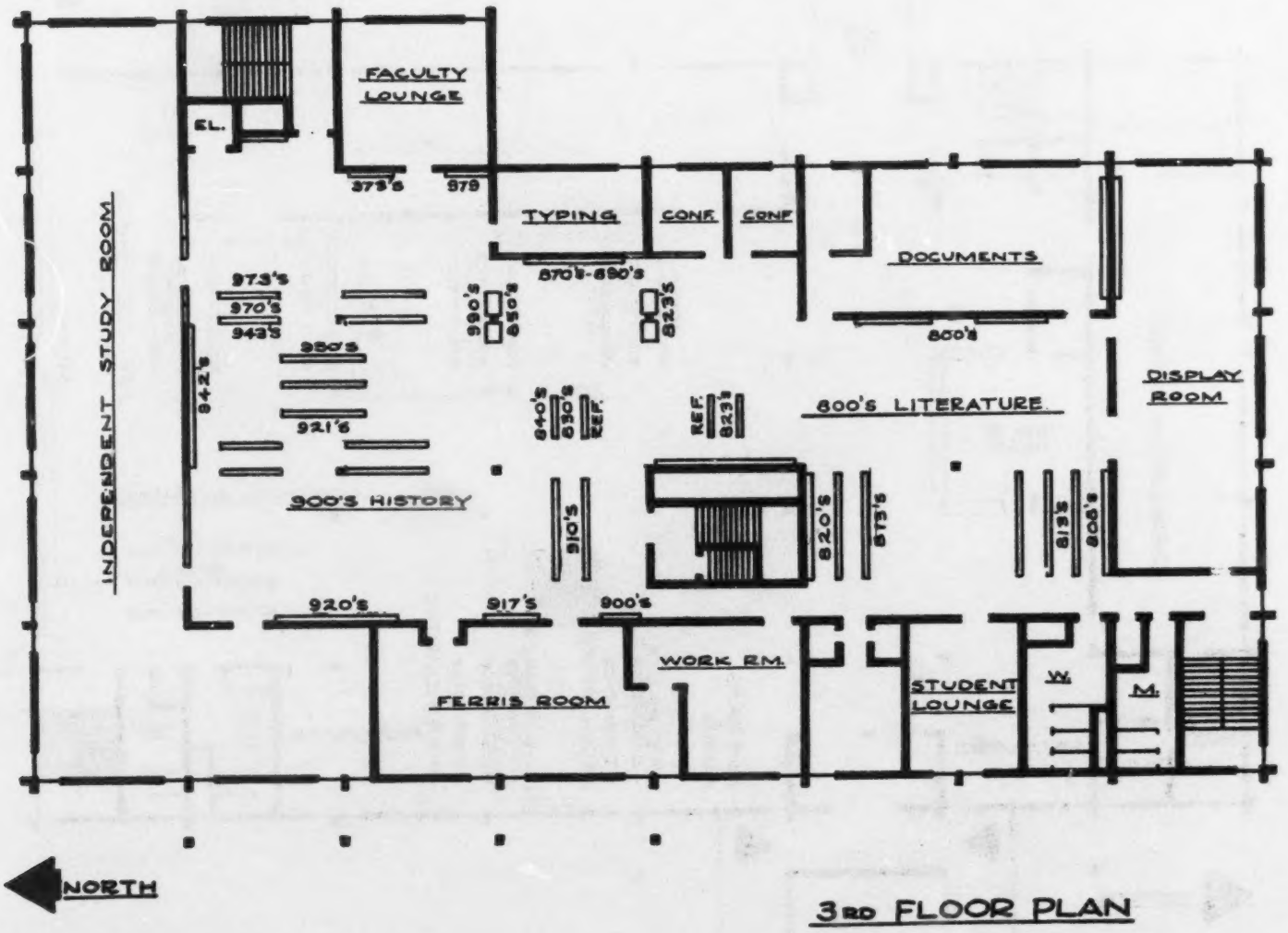
Chimes ring 15 minutes before closing time to allow students to check out books. Chimes ring again at closing time. All books must be checked out 15 minutes prior to closing time.

Lost and found articles are kept behind the Circulation Desk on first floor. Articles found in the building should be taken to this desk.





2ND FLOOR PLAN



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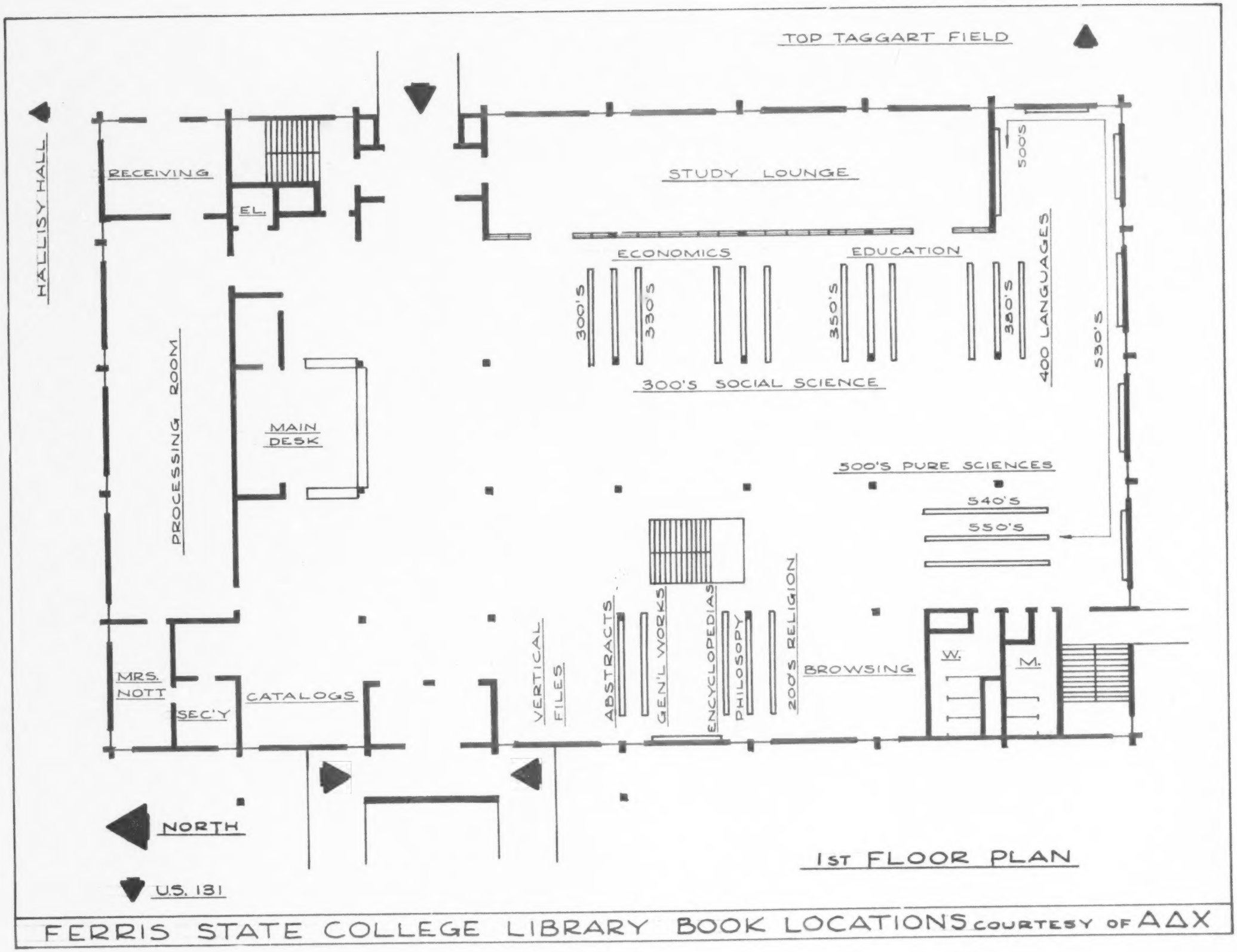
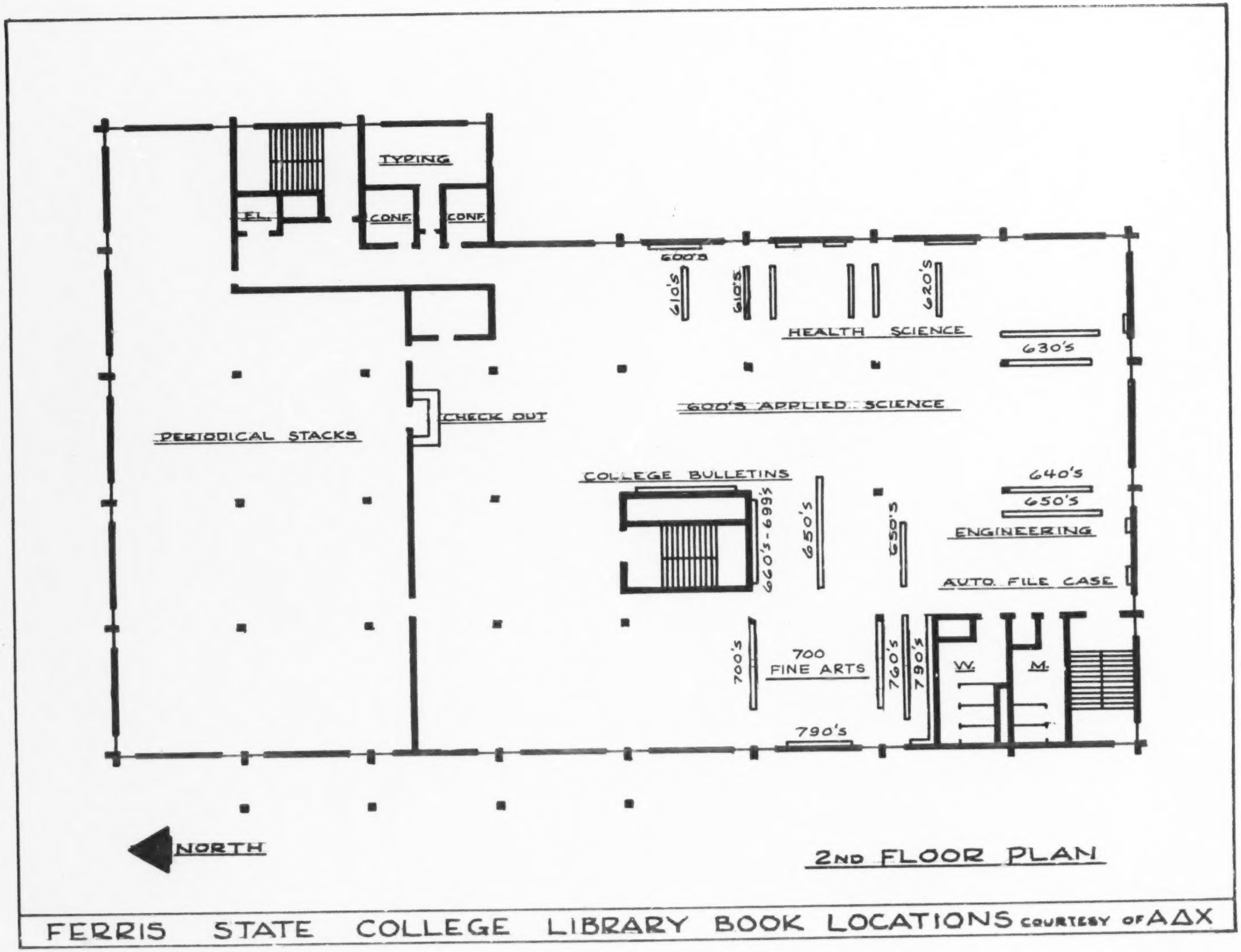


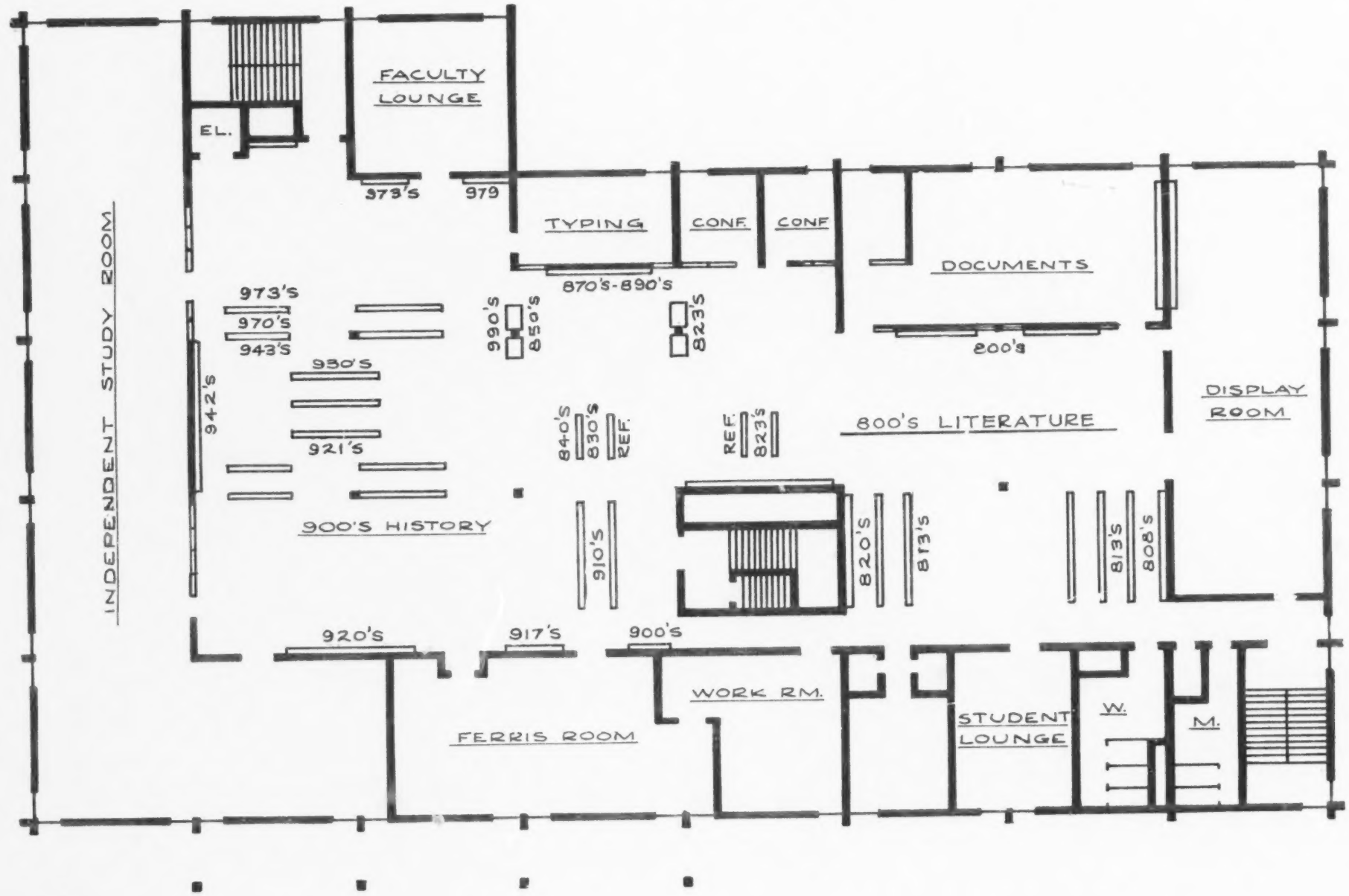
1ST FLOOR PLAN

FERRIS STATE COLLEGE LIBRARY BOOK LOCATIONS courtesy of ΑΔΧ



2ND FLOOR PLAN

FERRIS STATE COLLEGE LIBRARY BOOK LOCATIONS COURTESY OF AΔX



3RD FLOOR PLAN

FERRIS STATE COLLEGE LIBRARY BOOK LOCATIONS COURTESY OF AΔX